



Display Energy Certificates

From 1 October 2008, in England and Wales, many larger buildings within the HE and FE sector are now required to put on public display certificates detailing how energy efficient they are. And while the new regulations do not apply to all buildings, almost all will benefit from employing the techniques used to generate Display Energy Certificates (DECs).

The Energy Performance of Buildings Directive

DECs are one of the requirements of the European Union's Energy Performance of Buildings Directive (EPBD). The Directive established the principle that all buildings in Europe should eventually be assessed for energy efficiency and given a rating. This is expressed graphically in terms of coloured bands from A to G, like those seen on household appliances (washing machines, fridge/freezers, light bulbs, etc) and new cars. An 'A' rating means high efficiency, 'G' means very poor performance.

EPCs and DECs

The Directive describes two approaches to calculating energy performance. The first, adopted for Energy Performance Certificates (EPCs) in the UK, assesses a building 'as built' – i.e. based on the thermal efficiency of the structural elements and the fixed building services. This is known as an 'asset rating'. An EPC must be produced when a building is constructed and whenever it is sold or rented. Otherwise, though, there is no requirement to have one.

The second approach, used in Display Energy Certificates (DECs), focuses on the way the building is managed in practice – it results in an 'operational rating' based on actual energy consumption. DECs must be

renewed annually and, as they will also include the two previous years' ratings, they chart improvement over time.

Who needs a DEC?

There are three criteria which determine whether a building needs a DEC, where a 'building' is defined as an enclosed space where energy is used to condition the internal environment – i.e. it must have heating, mechanical ventilation or air conditioning.

1. The building has a total useful floor area of more than 1000m². If the building is designed so that different parts are used separately (and these are separately metered and controlled), then the size criterion is applied to each part individually.
2. The building must be occupied by an institution providing a 'public service' to a large number of people. Public services are traditionally provided by local or national government, or by the taxpayer. This clearly covers HE and FE bodies.
3. The building is frequently visited by members of the public. Buildings which are only likely to be visited by employees, people making deliveries or carrying out maintenance will not require DECs. However, students are considered to be 'members of the

public' which means that virtually all university or college buildings would require a DEC – including halls of residence, lecture theatres and laboratories as well as social and leisure facilities.

It is the **occupier** of the building that has the legal responsibility to display the certificate and this must be in a prominent place clearly visible to the public.

What does a DEC contain?

By law, the following must appear on a Display Energy Certificate:

- an Operational Rating
- the Asset Rating (if available)
- the Operational Ratings for the previous two years (obviously not available until the scheme is two years old)
- the benchmark performance value for the particular type of building.

In practice, details of total emissions, the main heating fuel, use of renewables and other details will also be included.

The DEC itself will also show the rating in the easily recognisable series of coloured bands from A to G.

The Advisory Report

The DEC must be accompanied by an Advisory Report which lists a range of possible improvements, the measures being grouped according to payback period: short term (up to three years); medium term (3-7 years); and long term. Between five and 10 measures are included in each category. These are generic recommendations, not specific to a particular building. Government guidance says that occupiers "should seek further detailed professional advice before reaching any decision on how to improve the energy performance of the building". ESTA members will be pleased to advise on recommendations listed in the Advisory Report.

Who can provide a DEC?

DECs and Advisory Reports can only be issued by an assessor accredited by Government-approved bodies. Employees can become assessors "provided they meet the standards of, and are accepted by, an accreditation scheme". Membership of an approved accreditation scheme is deemed to meet the EPBD's stipulation that assessors must be sufficiently 'independent'.

The Operational Rating

The heart of the DEC is the Operational Rating, which

is a measure of how efficiently the building is being run, compared to an 'average' building of that type. It is calculated from the amount of energy consumed over one year, expressed as carbon dioxide emissions. That figure is divided by the total useful floor area to give a result in tonnes of carbon dioxide per m² per year.

This is then compared with the emissions from a hypothetical 'typical' building of this type – the benchmark. The Chartered Institution of Mechanical Services Engineers (CIBSE) has developed 29 benchmarks covering virtually all common types of building.

If the actual building has the same emissions as the benchmark building, it receives a rating of 100. If it has no emissions it has a rating of 0, while a building that emits twice the average would be given a rating of 200.

Factors affecting the Operational Rating

While the theory behind the Operational Rating (OR) is straightforward, a number of factors can influence the final result, including:

- *location* – local weather will affect energy consumption and the OR calculation takes account of this through degree day adjustment
- *separable energy use* – certain specific types of energy use can be excluded from the calculation if separately metered. For the education sector, only the provision of a regional server room in a building or sports floodlighting are likely to qualify
- *occupancy* – significantly extended opening hours qualify for an adjustment to the OR.

Producing the DEC

Actual meter readings or consignment notes for all the fuels used in the building must be produced, representing at least 95% of all energy consumption (otherwise a default rating of 200 – i.e. very poor – will be awarded as a default value). The data should be available from:

- on-site energy meters
- utility or energy suppliers
- the district heating/cooling provider

Where a building is leased or rented, the landlord should be able to provide the data in a standard Landlord's Energy Statement.

For district heating or cooling, as well as electricity either generated on-site or received from external private distribution systems, the average carbon factor for the fuel is needed (e.g. CO₂/kWh delivered).

The energy assessor can ask 'fit and proper' and suitably qualified people within the organisation to help him/her gather this information. The assessor may also use data previously collected, if satisfied that this has been properly collected and that it accurately reflects building performance. Automated energy metering and management (aM&T) systems are clearly an advantage in such circumstances.

The assessor also needs up to date information about

the building. This can be previously gathered information or it can be collected at the time in a desk-based or walk-round survey.

Standard reference information used in producing the DEC is available to assessors through the Government's web-based Common Information Point (CIP). Software for compiling the DEC and Advisory Report can be downloaded by the assessor from their accreditation scheme's website.

Further Information

General information on DECs: www.communities.gov.uk/epbd

Assessors and certificates as well as UPRNs: www.ndepcregister.com

Benchmarking: www.cibse.org

Metering and energy management: www.esta.org.uk

FAQs

Why does assessment use CO₂ emissions alone?

The different types of energy consumption must be aggregated on a common basis in order to compare buildings easily. The UK has decided that the common unit should be CO₂ emissions as this is the major driver for energy policy.

How do I find an assessor – and how can I check the validity of an assessor or the DEC issued?

A list of assessors can be found on the Government's register at: www.ndepcregister.com. This can be used to find local assessors, check their authenticity and also to check the authenticity of individual DECs using their unique identification numbers.

I want to be able to produce DECs in-house. Is that possible?

The regulations accept that many institutions want their employees trained and accredited as energy assessors. These people have to become members of an accreditation scheme. They also have to declare their relationship to the occupier on each certificate produced. Details of the approved accreditation schemes can be found on the website of the Directive Implementation Advisory Group at: www.diag.org.uk

We have recently taken over some buildings and do not have the historical data needed.

Where occupiers have been in a building for less than 15 months at 1 October 2008, the regulations allow calculations to be based on the period of occupation.

What happens if I cannot provide all the information required for the DEC?

If information is not available for at least 95% of the energy used in the building, then a default Operational Rating of 200 will be recorded. This indicates an emissions rate of twice the average for the type of building and merits a Grade G label – given to the worst performing buildings. Other comparative indicators will also be set to twice the typical values.

My building does not seem to fit into any of the standard profiles.

CIBSE has prepared benchmarks for 29 different types of building. However, it is acknowledged that these will not cover all possibilities. The regulations allow for 'composite benchmarks' to be calculated which take differing building types into account.

What is 'useful floor area'?

The 'total useful floor area' is the total area of all enclosed spaces measured to the internal face of the external walls – i.e. the gross floor area as measured in accordance with the Building Regulations. So areas that are not enclosed (such as open floors, covered ways and balconies) are excluded. But the area of sloping surfaces such as staircases, galleries, raked auditoria and tiered terraces should be taken as their area on the plan.

What is the 'nominated date' and can this change from year to year?

The nominated date is the point at which the DEC's 12-month period of validity begins. An overlap of up to three months is allowed between successive nominated dates to align the DEC with others (for large building portfolios) or with existing administrative periods. However, there must be no gaps between successive DEC's. The date is nominated by the assessor but normally in consultation with the building occupier.

The regulations say that the DEC should be 'clearly visible' to members of the public. What does this mean in practice?

The DEC has to be displayed in a prominent place and it is recommended that it should be no smaller than A3 in size.

What are the penalties for not having a DEC?

Local authorities have the power to issue a penalty charge notice of £500 for failure to display a DEC in a prominent place clearly visible to the public. A further £1,000 can be charged for failure to possess, or have in one's control, a valid advisory report. There will still be an obligation to commission these documents even after paying the fines. If it can be shown that all reasonable steps have been made to avoid breaching the regulations, the penalty charges will be withdrawn.

Can I use my existing aM&T or M&T system to produce the DEC?

Yes, if the system is approved by CLG and is accepted by the relevant accreditation scheme. This will allow users to capitalise on the wealth of data they have captured over the years on a wide portfolio of buildings. Once approved, the system will be able to print the DEC directly. You can view approved systems at: www.ukreg-accreditation.org/ND-ApprovedSoftware.html (see 'Approved ORCalc software'). It is still the responsibility of the energy assessor to ensure the accuracy and completeness of meter readings and measurements.



This EAUC Insight Guide on Display Energy Certificates was written by Alan Aldridge at ESTA

**The Environmental and Sustainability Champion within Further and Higher Education in the United Kingdom.**

The EAUC provides training, advice and support to our members as well as providing a forum for best practice in the sector.

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